

In the claims:

1. (withdrawn).
2. (withdrawn).
3. (withdrawn).
4. (withdrawn).
5. (withdrawn).
6. (withdrawn).
7. (withdrawn).
8. (withdrawn).
9. (withdrawn).
10. (withdrawn).
11. (withdrawn).
12. (withdrawn).
13. (withdrawn).
14. (withdrawn).
15. (withdrawn).
16. (withdrawn).

17. (withdrawn).

18. (withdrawn).

19. (withdrawn).

20. (withdrawn).

21. (withdrawn).

22. (withdrawn).

23. (currently amended) A method of modifying the electrophysiological function of an excitable tissue region of an individual, the method comprising:

(a) providing cells expressing at least one polypeptide forming a functional ion channel or transporter and at least one polypeptide forming gap junctions; and

(b) -implanting said cells into the excitable tissue region, wherein such that each implanted cell forms:

(ai) gap junctions with at least one cell of the excitable tissue region; and

(bii) a functional ion channel or transporter;

thereby modifying the electrophysiological function of the excitable tissue region.

24. (original).

25. (cancelled).

26. (cancelled).

27. (currently amended) The method of claim ~~25~~38, wherein expression

of each of said at least one polypeptide from said exogenous polynucleotide is regulatable by an endogenous or an exogenous factor.

28. (original).

29. (original).

30. (currently amended) The method of claim ~~28~~29, wherein said step of regulating said permeability is effected by administering said exogenous factor to the excitable tissue region.

31. (currently amended) The method of claim 23, wherein each implanted cell ~~is capable of forming~~forms said functional ion channel or transporter following induction.

32. (original).

33. (original).

34. (original).

35. (original).

36. (currently amended) A method of modifying the electrophysiological function of an excitable tissue region of an individual, the method comprising:

~~the step of expressing an exogenous polypeptide in at least a portion of cells forming a part of, or being in contact with, the excitable tissue region, said exogenous polypeptide being capable of forming a functional ion channel or transporter within said at least a portion of said cells to thereby modify the electrophysiological function of the excitable tissue region.~~

(a) transforming cells with an exogenous polynucleotide encoding at least

one polypeptide forming a functional ion channel or transporter and/or at least one polypeptide forming gap junctions; and

(b) implanting said cells into the excitable tissue region of the individual, such that each implanted cell forms:

(i) gap junctions with at least one cell of the excitable tissue region; and

(ii) a functional ion channel or transporter;

thereby modifying the electrophysiological function of the excitable tissue region of the individual.

37. (cancelled).

38. (new) The method of claim 23, wherein each of said at least one polypeptide forming said functional ion channel or transporter and at least one polypeptide forming gap junctions is expressed from an exogenous polynucleotide.

39. (new) The method of claim 23, wherein each of said at least one polypeptide forming said functional ion channel or transporter and at least one polypeptide forming gap junctions is expressed from an endogenous polynucleotide.